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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,464	11/12/2003	Won B. Bang	A7695/T51600	9288

7590

03/08/2005

Patent Counsel
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EXAMINER

COLEMAN, WILLIAM D

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/712,464	Applicant(s) BANG ET AL	
	Examiner W. David Coleman	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-24 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-12 and 16 is/are rejected.
- 7) ☒ Claim(s) 7, 13-15 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

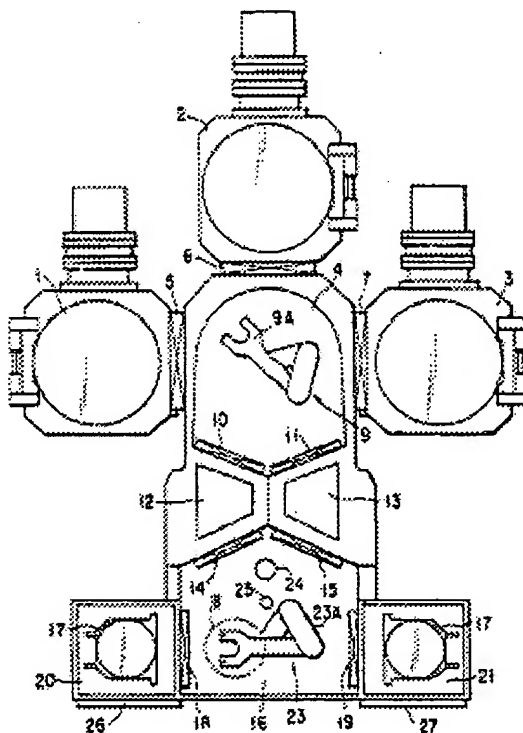
1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 6, 8, 12, 15, 16, 18 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee, U.S. Patent 5,785,796.

Lee discloses a semiconductor process as claimed. See **FIGS. 1-24C**, where Lee teaches the following limitations.



3. Pertaining to claim 1, Lee teaches a method of operating a substrate processing chamber, the method comprising:

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transferring a first substrate into the substrate processing chamber and heating the substrate to a first temperature of at least 510°C (please note that since Lee teaches incorporating a thermal oxide, it is well known that thermal oxides are formed at least at the claimed temperature); depositing an insulating layer over the first substrate while reducing the temperature of the substrate from the first temperature to a second temperature that is lower than the first temperature (cleaning and etching takes place at lower temperature (column 22, line 66 and see table 1);

transferring the first substrate out of the substrate processing chamber;

removing unwanted deposition material formed on interior surfaces of the chamber during the depositing step by introducing reactive halogen species into the chamber while increasing the temperature of chamber (column 11, lines 47-50);

transferring a second substrate into the substrate processing chamber and heating the substrate to the first temperature (it is well known to fabricate more than one substrate); and depositing an insulating layer over the second substrate while reducing the temperature of the substrate from the first temperature to the second temperature.

4. Pertaining to claim 5, Lee teaches the method of claim 1 wherein the insulating layer comprises silicon oxide.

5. Pertaining to claim 6, Lee teaches the method of claim 1, wherein each depositing step includes first substep of depositing an initial portion of the insulating layer over the first and second substrates, respectively, at the first temperature.

6. Pertaining to claim 8 (see the rejection as applied to claim 1), Lee teaches a method of operating a substrate processing chamber having a substrate heater, the method comprising: transferring a first substrate into the substrate processing chamber and heating the heater to a first set point that causes the substrate to be heated to a first temperature of at least 510°C; depositing an insulating layer over the first substrate while reducing the temperature of the heater to a second set point thereby reducing the temperature of the substrate from the first temperature to a second temperature that is lower than the first temperature; transferring the first substrate out of the substrate processing chamber; removing unwanted deposition material formed on interior surfaces of the chamber during the depositing step by introducing reactive halogen species into the chamber while increasing the temperature of the heater from a third set point that is lower than the first set point to a fourth set point that is lower than the first set point; transferring a second substrate into the substrate processing chamber and heating the heater to the first set point substrate to the first temperature; and depositing an insulating layer over the second substrate while reducing the temperature of the substrate from the first temperature to the second temperature.

7. Pertaining to claim 12, Lee teaches the method of claim 1 wherein the insulating layer comprises silicon oxide (column 36, lines 32-35).

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8. Pertaining to claim 16, Lee teaches the method of claim 8 wherein each depositing step includes first substep of depositing an initial portion of the insulating layer over the first and second substrates, respectively, at the first temperature.

9. Pertaining to claims 2, 3, 4, 9, 10 and 11, given the teaching of the references, it would have been obvious to determine the optimum thickness, temperature as well as condition of delivery of the layers involved. See *In re Aller, Lacey and Hall* (10 USPQ 233-237) "It is not inventive to discover optimum or workable ranges by routine experimentation. Note that the specification contains no disclosure of either the critical nature of the claimed ranges or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Any differences in the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986)

Appellants have the burden of explaining the data in any declaration they proffer as evidence of non-obviousness. *Ex parte Ishizaka*, 24 USPQ2d 1621, 1624 (Bd. Pat. App. & Inter. 1992).

An Affidavit or declaration under 37 CFR 1.132 must compare the claimed subject matter with the closest prior art to be effective to rebut a prima facie case of obviousness. *In re Burckel*, 592 F.2d 1175, 201 USPQ 67 (CCPA 1979).

Objections

10. Claims 7, 13, 14, 15 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856.

The examiner can normally be reached on Monday-Friday 9:00 AM-5:30 PM.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**W. DAVID COLEMAN
PRIMARY EXAMINER**

W. David Coleman